



Accelerator GG1 Parameters & Layout

Snowmass ILC Workshop

August 19, 2005

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Topics

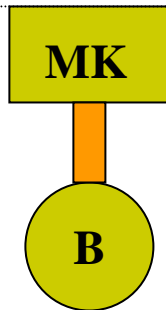
Tuesday – Baseline Configuration Document

Wednesday – Parameters

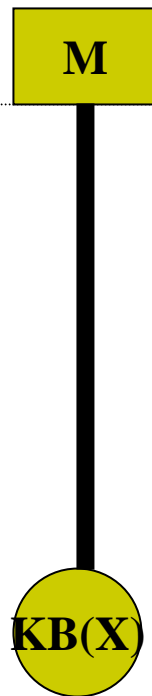
Thursday – Layout Issues

Options vs. Tunnel Topologies

M=Modulator
 K=Klystron
 B=Beam
 X=Step-up Xfmr
 ■ = Cables
 ■ = Waveguide



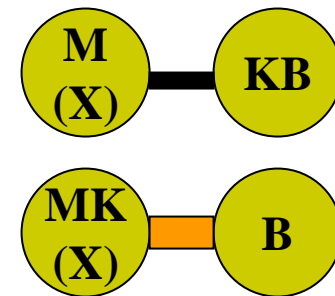
1. SLAC: Gallery + Shallow Tunnel



2. TESLA: Spaced Surface Huts + Deep Tunnel

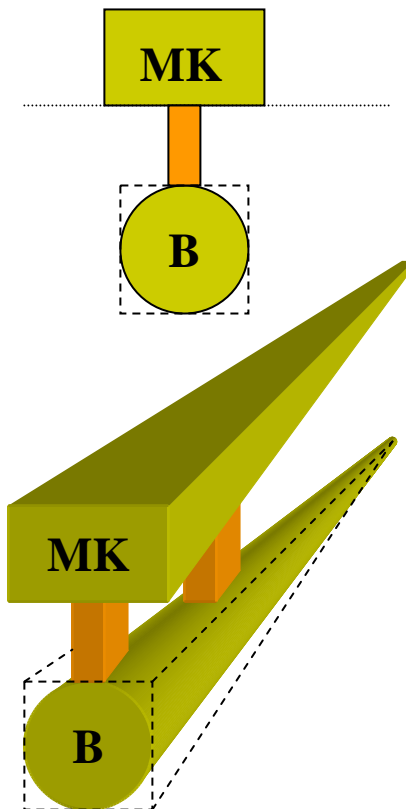


3. Single Tunnel Deep or Shallow



4. Dual Deep Tunnels

1. *Surface Gallery + Shallow Tunnel*



Shallow tunnel

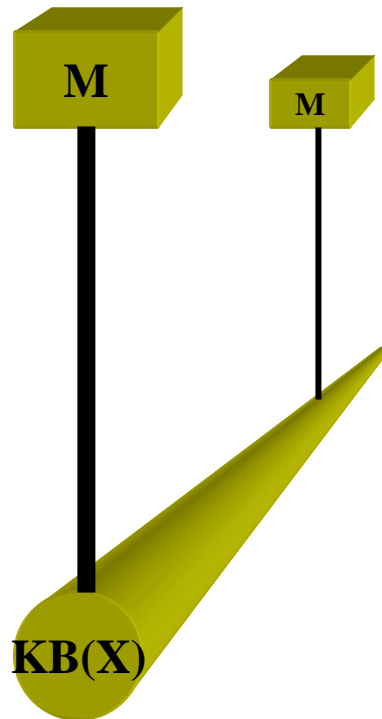
Bored or rectangular cut and cover

~10 m deep waveguide feed penetrations every 40m (~1000 total)

M-K co-located on surface for easy access

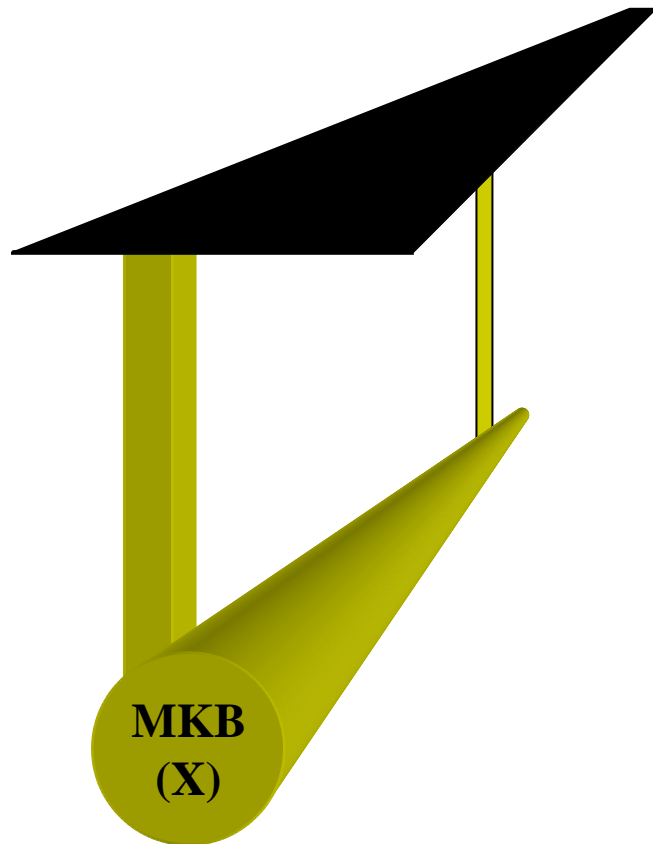
n/N redundancy for energy overhead in case of failure

2. *Spaced Surface Huts + Deep Tunnel*



Modulator cluster in huts
service up to 2.5 Km sector
Klystrons in beam tunnel
Cables HV or LV + X
Modulators easily accessible,
klystrons and Xfmr not

3. Single Tunnel Deep or Shallow



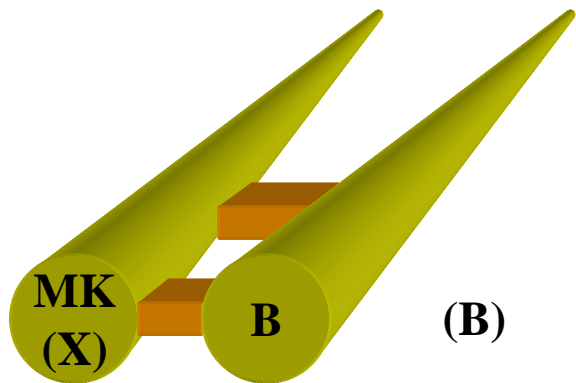
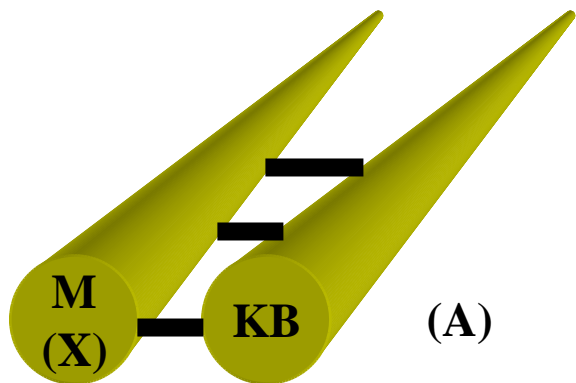
Modulators & Klystrons
co-located in beam tunnel

Access Penetrations
every n Km

All electronics in beam
tunnel

Shield electronics from
neutron, gamma flux

4. Dual Deep Tunnels



Modulators and/or klystrons accessible via 2nd tunnel

Access every n Km

Lateral penetrations every ~40 m for short WG or cable feeds

Fig. A: Klystrons inaccessible in beam tunnel – LV/HV Cable feed

Fig. B: Klystrons accessible co-located in service tunnel – Waveguide Feed

Availability Rankings

1. Near-surface building w/ all RF accessible
2. Twin tunnel with all RF components accessible.
Penalty for more difficult deep tunnel access.
3. Single deep tunnel with huts for modulators.
Penalty for inaccessible cable plant, transformer, klystron.
4. Single deep tunnel with all components inside
However, may be greatly improved with modular design (see later in this talk).